

**10 CSR 10-6.330 Restriction of Emissions
From Batch-Type Charcoal Kilns**

PURPOSE: This regulation establishes emission limits for batch-type charcoal kilns based on operational parameters that reflect the Best Available Control Technology (BACT) for this industry as of August 20, 1997.

(1) Applicability.

(A) This regulation applies to all batch-type charcoal kilns throughout the entire state of Missouri.

(B) In the event that other rules in the *Code of State Regulations* are also applicable to batch-type charcoal kilns, the more stringent rule requirement shall apply.

(2) Definitions.

(A) "Batch-type charcoal kiln"—Charcoal kilns that manufacture charcoal with a batch process rather than a continuous process. The batch-type charcoal kiln process typically includes loading wood, sealing the kiln, igniting the wood and controlled burning of the wood to produce charcoal which is unloaded.

(B) "Burn cycle"—The burn cycle for a charcoal kiln begins at the time that a batch of wood is initially lit and ends when the burn for that batch is completed and the kiln is sealed. The burn cycle does not include cool down time.

(C) "Charcoal kiln"—Any closed structure used to produce charcoal by controlled burning (pyrolysis) of wood. Retorts and furnaces used for charcoal production are not charcoal kilns.

(D) "Charcoal kiln control system"—A combination of an emission control device and connected charcoal kiln(s).

(E) "Emission control device"—Any device used to reduce contaminant emissions into the air. Thermal oxidizers or afterburners are often used on charcoal kilns for burning exhaust gases to reduce particulate matter, carbon monoxide and volatile organic compound emissions.

(F) "Fill capacity"—The maximum amount of wood that can be properly loaded into a charcoal kiln prior to the burn cycle.

(G) "Opacity"—The extent to which airborne material obstructs the transmission of incident light and obscures the

visual background. Opacity is stated as a percentage of light obstructed and can be measured by a continuous opacity monitoring system or a trained observer. An opacity of one hundred percent (100%) represents a condition in which no light is transmitted and the background is completely obscured.

(H) "Particulate matter"—Particulate matter emissions from charcoal kilns and charcoal kiln control systems shall consist of all particulate matter including condensibles.

(I) "Residence time"—period of time in which gas in a thermal oxidizer, incinerator or afterburner is exposed to heat and oxygen at a specified temperature in order to destroy pollutants present in the gas.

(J) "Treated wood"—Wood that has been subjected to a chemical process or application.

(K) Definitions of certain terms specified in this rule, other than those specified in this rule section, may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) Restriction of Emissions.

1. No charcoal kiln control system shall emit visible emissions greater than ten percent (10%) opacity.

2. No charcoal kiln control system shall emit more than the following emissions:

A. 1.5 pounds per hour of particulate matter;

B. Either 0.24 pounds per hour volatile organic compounds (VOCs) or the emission rate equivalent to ninety-nine percent (99%) VOC control efficiency, whichever results in a lower emission rate; and

C. 1.75 pounds per hour of carbon monoxide (CO).

3. Charcoal kiln control systems shall be maintained to assure that no visible fugitive emissions result from equipment cracks or door seals.

4. Fugitive dust from other operations at charcoal manufacturing installations (such as charcoal handling, vehicle haul roads, crushing, screening, etc.) shall comply with the requirements of 10 CSR 10-6.170 Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin.

(B) Operating Requirements.

1. No charcoal kiln shall be operated without an emission control device installed and operated to meet the requirements of this rule and other applicable state and federal rules.

2. Each emission control device shall have a sight glass installed in the burning chamber such that the burn can be visually monitored.

3. All charcoal kiln emissions shall be ducted to an operating emission control device throughout the entire burn cycle.

4. Emission control devices shall be equipped with automatic temperature control systems which are set such that gas streams are heated and maintained at a nominal operating temperature of sixteen hundred degrees Fahrenheit (1600°F) with a fifteen hundred twenty degree Fahrenheit (1520°F) minimum temperature allowed, for a minimum residence time of 1.7 seconds.

5. All charcoal kiln control systems shall be operated using the same fuel(s) as used during performance testing.

6. No charcoal kiln shall burn treated wood at any time.

7. Rule 10 CSR 10-6.050 Startup, Shutdown and Malfunction Conditions shall only be applicable to charcoal kiln control systems with regard to the malfunction provision, and not with regard to start-up and shutdown.

8. All charcoal kiln control systems shall be operated and maintained in accordance with the department approved standard operating procedures manual described in subsection (3)(D) of this rule and the department approved maintenance practices manual described in subsection (3)(E) of this rule.

9. All charcoal kiln control systems that have been performance tested shall continuously display and record the emission control device operating temperature with the permanently installed temperature recording device at all times of operation.

(C) Each charcoal kiln shall have a unique identification number permanently affixed to the exterior of the charcoal kiln structure.

(D) The owner or operator of charcoal kilns at charcoal manufacturing installations shall develop, submit for department approval and establish a standard operating procedures manual for each charcoal manufacturing installation. At a minimum, this manual shall describe—

1. Safe charcoal kiln operation;
2. Bundle stacking (including adequate platform of logs to enhance combustion);
3. Use of properly seasoned wood (cover mixing of wood species, if applicable);
4. Control of fugitive emissions from each charcoal kiln (e.g. "mudding" cracks and doors) and each emission control device; and
5. Methods of reporting and recordkeeping required by section (4) of this rule.

(E) The owner or operator of charcoal kilns shall develop, submit for department approval and establish a maintenance practices manual for each charcoal kiln control system. This manual shall be maintained at each site for the specific emission control device(s) installed at the site. At a minimum, this manual shall include:

1. Maintenance of all equipment (e.g. proper cleaning of inlet ports);
2. Measures taken in the event of emission control device failure to minimize emissions (e.g. opening kiln caps and air vents to allow kiln wood to burn down to minimize smoking conditions or shutting all kiln inlets and outlets until all combustion in the chamber is extinguished);

3. Inspections performed and frequency (e.g. daily burner operation); and

4. Methods of reporting and recordkeeping required by section (4) of this rule.

(F) Performance Testing and Compliance Determinations.

1. For compliance determination, each charcoal kiln control system shall be evaluated as a unit and performance tested for compliance with the emission limit requirements of paragraphs (3)(A)1. and 2. of this rule.

2. All charcoal kiln control system performance tests shall be conducted with each charcoal kiln of the system filled to at least ninety percent (90%) of fill capacity and at the midpoint of burn cycle unless otherwise noted. The midpoint of each charcoal kiln burn cycle shall be no less than forty percent (40%), and no more than sixty percent (60%) of the total burn cycle.

3. Emission control device fuel type(s) and quantity(ies) used during the performance test shall be recorded.

4. All performance test operating temperatures shall be recorded with a continuous recording device that is permanently installed and the temperature shall be continuously displayed and recorded throughout the entire performance test.

5. Each performance test shall consist of a minimum of three (3) runs for each pollutant specified in paragraph (3)(A)2. of this rule and shall be conducted using the test methods specified in section (5) of this rule. Each test run duration shall be one (1) hour unless the test method requires a longer duration. Compliance shall not be considered demonstrated until the department has validated performance test results.

6. Compliance determinations for visible fugitive emission requirements of this rule shall use the test method specified in subsection (5)(E) of this rule.

7. The director may allow similar charcoal kiln control system units to operate without the individual performance tests required by paragraph (3)(F)1. if the following conditions are met:

A Similar units have the same number of charcoal

kilns, the same construction, capacities within ten percent (10%) of each other and the same design;

B. Similar units are controlled by emission control devices with the same construction, the same size and the same design; and

C. Three (3) separate similar units have successfully demonstrated compliance with the emission limit requirements of paragraphs (3)(A)1. and 2. of this rule.

8. The director may allow a specific charcoal kiln control system to operate at a temperature lower than the paragraph (3)(B)4. temperature requirement of this rule if the owner or operator successfully demonstrates by performance test that the following conditions are met:

A. All emission limit requirements of paragraphs (3)(A)1. and 2. of this rule are met; and

B. The CO control efficiency is greater than or equal to ninety-nine percent (99%).

9. Control efficiency shall be calculated from performance test data using the following calculation:

$$CE = \left(1 - \frac{\text{Outlet Emission Rate}}{\text{Inlet Emission Rate}} \right) \times 100$$

10. The owner or operator of a charcoal kiln shall be allowed a period of one hundred eighty (180) days from the first time combustion occurs in the emission control device to get the charcoal kiln control system operating in compliance with this rule. Combustion in the emission control device of a charcoal kiln shall occur no later than December 31 of the applicable compliance year established in subsection (3)(G) of this rule. During this one hundred eighty (180)-day period, deviations from the emission limit and operating requirements of this rule shall not be considered violations subject to enforcement.

11. If any existing emission control device installed or fabricated prior to the effective date of this rule does not meet the requirements of this rule, the emission control device will be modified or replaced such that requirements of this rule are met no later than eighteen (18) months after the effective

date of this rule. Accelerated time constraints established by the Environmental Protection Agency (EPA) Final Consolidated Consent Agreement and Consent Order dated September 30, 1997, take precedence over this requirement.

12. Any owner or operator may shut down existing charcoal kilns reported as active rather than installing required emission control devices. If the owner or operator subsequently decides to reactivate charcoal kilns, the charcoal manufacturing installation must have required emission control devices in operation on those kilns, prior to activation and the owner or operator must notify the department at least thirty (30) days prior to reactivation.

13. Charcoal kilns that were not reported as active, cannot be reactivated without required emission control devices installed. Any emission control device installed per subsection (3)(F) of this rule does not count towards the schedule for emission control devices in subsection (3)(G) of this rule.

14. Any existing charcoal kiln that has been inactive for sixty (60) months or longer shall comply with all federal and state rules, and obtain a construction permit prior to reactivation.

(G) Compliance Schedule.

1. For each charcoal manufacturing installation owned or operated, each owner or operator shall install an emission control device to meet the requirements of this rule on a minimum of two (2) active charcoal kilns by December 31, 1998. Accelerated compliance schedules established by the Environmental Protection Agency (EPA) Final Consolidated Consent Agreement and Consent order dated September 30, 1997, take precedence over this requirement.

2. After December 31, 1998, each owner or operator shall install an emission control device to meet the requirements of this rule on remaining active charcoal kilns at the rate of a minimum of two (2) charcoal kilns per charcoal manufacturing installation per calendar year by December 31 of each year. All emission control devices must be installed no later than December 31, 2005. Accelerated compliance schedules established by the Environmental Protection Agency (EPA) Final Consolidated Consent Agreement and Consent Order dated September 30, 1997, take precedence over this requirement. An owner or operator can install emission control devices early without accelerating the

schedule for installation of control devices contained in this paragraph.

3. The standard operating procedures manual and maintenance practices manual described in subsection (3)(D) and (3)(E) of this rule shall be developed and submitted to the department for approval no later than December 31, 1998.

4. All new charcoal kilns shall comply with all federal and state rules and obtain all necessary permits prior to operation.

(4) Reporting and Record Keeping.

(A) Owners or operators of all charcoal kilns shall maintain a file on each active charcoal kiln with the following information for a minimum of five (5) years from the date the data was collected:

1. Average annual production (tons of charcoal per charcoal manufacturing installation per year divided by the number of charcoal kilns at the charcoal manufacturing installation);

2. Start-up time (hour and minute) for each burn cycle;

3. Emission control device temperature (in degrees Fahrenheit) throughout each burn cycle shall be measured at a point in the emission control device where gas residence time is no less than 1.7 seconds;

4. The emission control device temperature shall be continuously displayed and recorded by a continuous recording device. (For twelve months after the effective date of this rule, manual recording of the emission control device temperature every fifteen (15) minutes shall be allowed for charcoal kiln control systems that are not performance tested);

5. Daily log for each charcoal kiln control system that includes start-up time(s), cool-down time(s), re-light time(s) and inspections performed (e.g. burn chamber);

6. Monthly log for each charcoal kiln control system that includes fuel usage and, where more than one (1) type of fuel is used, fuel types and times of usage;

7. Malfunction log for each charcoal manufacturing installation that includes a description of each malfunction cause, duration and actions taken to remedy the malfunction; and

8. Performance test reports for all emission control devices tested.

(B) No later than thirty (30) days after the effective date of this rule, owners or operators of all charcoal kilns shall provide the department with a list of the identification numbers of active charcoal kilns at each location at the time this rule becomes effective. If the active status of any charcoal kiln changes, including the construction of new charcoal kilns, the owner or operator shall provide an updated list to the department no later than thirty (30) days after the status change.

(C) all information maintained in the charcoal kiln file shall be made immediately available to Missouri Department of Natural Resources representatives upon request.

(5) Test Methods.

(A) Particulate matter emission level testing shall include condensibles and use the following methods:

1. 10 CSR 10-6.030(1), Reference Method 1—Sample and Velocity Traverses for Stationary Sources;

2. 10 CSR 10-6.030(2), Reference Methods 2—Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube);

3. 10 CSR 10-6.030(3), Reference Method 3—Gas Analysis for Carbon Dioxide, Excess Air and Dry Molecular Weight;

4. 10 CSR 10-6.030(4), Reference Method 4—Determination of Moisture in Gases;

5. 10 CSR 10-6.030(5)(A), Reference Method 5—Determination of Particulate Emissions from Stationary Sources; and

6. 40 CFR part 51, Appendix M—Recommended Test

10 CSR 10-6.330

Methods For State Implementation Plans. *Method 202*
—*Determination of Condensible Particulate Emissions from Stationary Sources.*

(B) VOC emission level testing shall use one (1) of the following methods as specified by 40 CFR part 60, Appendix A—Reference Methods;

1. *Method 18—Measurement of Gaseous Organic Compound Emissions by Gas Chromatography; or*

2. *Methods 25A—Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer.*

(C) CO emission level testing shall use 10 CSR 10-6.030(10), Reference Method 10—Determination of Carbon Monoxide Emissions from Stationary Sources.

(D) Emissions percent opacity testing shall use 10 CSR 10-6.030(9), Reference Method 9—Visual Determination of the Opacity of Emissions from Stationary Sources.

(E) Visible fugitive emissions testing shall use *Method 22—Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares* as specified by 40 CFR part 60, Appendix A—Reference Methods.

AUTHORITY: sections 643.030, 643.075 and 643.078, RSMo 1994 and 643.050, RSMo Supp. 1997. Original rule filed Nov. 25, 1997, effective July 30, 1998.*

** Original authority: 643.030, RSMo 1965, amended 1972, 1992, 1993; 643.050, RSMo, 1965, amended 1972, 1992, 1993, 1995; 643.075, RSMo. 1972, amended 1988, 1992; and 643.078 RSMo. 1992.*

CFR: 40 C.F.R. 52.1320 (c)(111)

FRM: 63 FR 67591 (12/8/98)

PRM: 63 FR 67639 (12/8/98)

State Proposal: MR 1057 (1/2/98)

State Final: 10 C.S.R. 10-6 (149) (6/30/98)

APDB File: MO-84

Description: This new rule establishes emission rate limits for particulate matter, volatile organic compounds, and carbon monoxide.

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None.